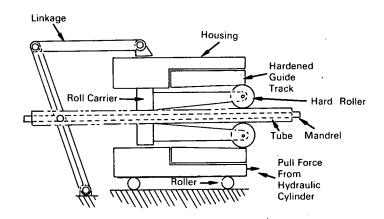


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Metal Tube Reducer Is Inexpensive and Simple to Operate



The problem:

To construct a device to reduce tube diameters, which is accurate, simple to operate, and inexpensive. Existing commercial tube reducing equipment is extremely expensive.

The solution:

A simple, low-cost tube reducer, a modification of an earlier device, which accepts tubing up to 1 inch outer diameter and can reduce this diameter to less than 1/2-inch with controlled wall thickness. A reciprocating three-cluster roll housing, traveling along tapered guide tracks, flows the tube wall over a mandrel or plug to reduce the tube cross-section. A mechanical linkage provides the carrier and housing motion required for the reducing operation.

How it's done:

The three-roll tube reducer, shown in the schematic diagram, consists of a reciprocating housing having three tapered guide tracks at the working end. A carrier for the three rolls is attached to a piston plate, which is driven by a mechanical linkage at half the reciprocating speed of the housing. The reciprocating motion is provided by a hydraulic cylinder.

The tube to be reduced is slipped over the mandrel or plug whose opposite end is held in a feed-index mechanism. Each time the rolls travel across the tube to reduce its cross-section, the tube is rotated 60° and the pass is duplicated. The tube is then advanced a predetermined amount, and the reducing-rolling action is repeated. The sequence is duplicated until the entire tube is reduced to the required outer diameter and wall thickness.

Notes:

- 1. The tube reducer has been used on stainless steels, Zircaloys, vanadium-base alloys and soft metals such as copper.
- 2. This device can reduce all of the tube without waste, an important factor when handling high-priced alloys. It produces extremely good surface finishes, with the outside and inside diameters true within 0.003-inch diameter. This device costs approximately 1/20 of existing devices.

(continued overleaf)

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- 3. Additional details are contained in the following, Argonne National Laboratory publications: (a) ANL-7127, p. 18-20; (b) ANL-7176, p. 27-29; and (c) CAPE Dwg. No. 1549. Purchase orders for these reports (\$3.00 each), microfiche (\$0.65 each) and orders and inquiries regarding CAPE packages in full print or microcopy forms should be sent directly to Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151.
- 4. Inquiries concerning this innovation may be directed to:

Office of Industrial Cooperation Argonne National Laboratory 9700 South Cass Avenue Argonne, Illinois 60439 Reference: B67-10401

> Source: R. M. Mayfield Metallurgy Division and S. B. Brak Central Shops Division (ARG-49)

Patent status:

Inquiries about obtaining rights for commercial use of this innovation maybe made to:

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